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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	3.095	29.502	33.003	0.000	33.003	51.939	19.737	50.032	68.031	0.000	255.339
671307: <i>C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)</i>	-	3.095	26.502	32.800	0.000	32.800	32.925	0.000	0.000	0.000	0.000	95.322
671308: <i>C-5 Modernization Efforts</i>	-	0.000	3.000	0.203	0.000	0.203	19.014	19.737	50.032	68.031	0.000	160.017

**Note**  
This program, BA 7, PE 0401119F, project 671308, C-5 Modernization Efforts, is a new start.

**A. Mission Description and Budget Item Justification**

The C-5M carries oversized and heavy cargo (tanks, helicopters, etc.) between main operating bases. Additionally, the aircraft is capable of carrying 73 troops and 36 standard 463-L pallets. There are 52 C-5 aircraft in the Air Force fleet. The fleet was delivered to the Air Force between 1969 and 1989. Initial service life for the aircraft was 30,000 flight hours. Service life is extended out to 2040 as a result of the reliability enhancement and re-engining program (RERP) modification. C-5M RDT&E efforts are the C-5M Replace Multi-functional Controls and Display (RMCD) program and C-5 Modernization.

RMCD is a modification to mitigate the obsolescence of the current control and display units.

C-5 Modernization is to develop future solutions for needed upgrades to combat obsolescence, safety of flight, and reliability/availability/maintainability issues to include but not limited to Mobile User Objective System (MUOS) Antenna upgrades, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), and viability improvement initiatives. Modernization upgrades include a new family of system aircraft concepts to provide U.S. forces with an improved radio resistant to jamming through fast-frequency hopping and digital modulation techniques to ensure integrate and accomplish rapid cargo delivery, survivability, and connectivity to assure Joint partner delivery in contested environments.

Efforts will include initial capabilities studies and analysis, risk reduction efforts, and studies and analysis to address Diminishing Manufacturing Sources (DMS).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2023 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2024 \$0.000 million is forecast for civilian pay expenses in this program element.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2025 Air Force	<b>Date:</b> March 2024
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	3.100	29.502	33.612	0.000	33.612
Current President's Budget	3.095	29.502	33.003	0.000	33.003
Total Adjustments	-0.005	0.000	-0.609	0.000	-0.609
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.005	0.000			
• Other Adjustments	0.000	0.000	-0.609	0.000	-0.609

**Change Summary Explanation**

The FY 2025 funding request was reduced by \$0.667 million to account for the availability of prior year execution balances.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)				<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
671307: C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)	-	3.095	26.502	32.800	0.000	32.800	32.925	0.000	0.000	0.000	0.000	95.322
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The C-5M Replace Multi-functional Controls and Display (RMCD) program is a modification to mitigate the obsolescence of the current control and display units. The RMCD program is also a comprehensive effort to ensure appropriate RMCD Line Replaceable Units (LRU) are developed and installed on the C-5M allowing aircraft operation in accordance with civil airspace access mandates for both US National Airspace System (NAS) and international civil airspace.

This effort centers on modifying the current display units to support legacy inputs and integration of new system capabilities with margin for growth by upgrading displays power solution. Use of mixed displays (current and new) is not permissible due to obsolescence and human factors considerations.

This modification may include software development, data, cyber security, testing, installation, spares, Systems Integration Lab (SIL), prototypes, and other program support activities. Funding may be used to address Diminishing Manufacturing Sources (DMS). The modification helps to maintain aircraft availability as the new multi-functional controls and displays replaces the current controls and displays. Funding supports studies and analysis, risk reduction efforts, Advisory and Assistance Services (A&AS), program support costs, change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs.

Current RMCD funding required for development activities through FY 2027. Initial procurement funds not required until FY 2026.

During FY 2023, the program completed the following milestones: Hardware Critical Design Review, Software Preliminary Design Review, and Milestone B.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY 2023 \$0.000M was expended for civilian pay expenses in this program element, and in FY 2024 \$0.000M is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> C-5 Replace Multi-Functional Controls and Display	3.095	26.502	32.800
<b>Description:</b> Replace Multi-Functional Controls and Display will enable the C-5M to achieve wartime mission requirements by maintaining fleet availability (mission capable rate).			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p><b>FY 2024 Plans:</b> EMD activities to include but not limited to software development, data, cyber security, testing, installation, spares, Systems Integration Lab (SIL), prototypes, and other program support activities. Continue hardware and engineering development activities to deliver Engineering Units for Displays and Graphics Processor Units.</p> <p><b>FY 2025 Plans:</b> Continue EMD activities to include but not limited to software development, data, cyber security, testing, installation, spares, Systems Integration Lab (SIL), prototypes, and other program support activities. Continue hardware and engineering development activities to deliver Engineering Units for Displays, testing within System Integration Lab and Graphics Processor Units.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding increased due to a full year (12 months) of EMD efforts.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	3.095	26.502	32.800

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025 Base</u>	<u>FY 2025 OCO</u>	<u>FY 2025 Total</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item C00500: C-5 Mods	17.533	27.637	45.361	-	45.361	32.417	33.153	33.843	-	38.980	228.924
• APAF 06 Line Item C00500: Initial Spares	1.269	2.053	3.166	-	3.166	0.000	0.000	0.000	-	0.000	6.488
• APAF 05 Line Item C00500 (2)....: Training PE 0401897F	3.633	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	3.633
• APAF 07 Line Item C00500: Post Production Support	18.000	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	18.000

**Remarks**

**D. Acquisition Strategy**

Program Acquisition Strategy Panel (ASP) approved program's acquisition strategy on 4 Apr 20. This strategy approved executing an Other Transaction Authority (OTA) contract to procure proof of concept hardware for test/analysis, award a Sole Source EMD contract to Lockheed Martin Aerospace for system software and hardware tech insertion, system integration, data management, systems engineering, logistics, test and training to modify 2 aircraft. At completion of EMD, the program would move into Milestone C for LRIP and production to follow.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)
<p>Delta ASP #1 to add risk reduction for hardware development and contractor software development oversight/metrics to use Agile development processes approved 08 Oct 20.</p> <p>Delta ASP #2 to exercise OT Hardware Amendment 1 approved 17 Dec 21.</p> <p>Delta ASP #3 approved 12 May 22 to align EMD contractor requirements based on limited funding in FY23/24 and to update software development strategy.</p> <p>Delta ASP #4 approved 29 Sep 23 to restructure EMD contractor requirements and include increased scope based on limited funding in FY23/24</p>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)
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<b>Product Development (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integration Contract	SS/CPIF	Lockheed Martin : Marietta, GA	-	-		15.559	Jan 2024	18.000	Jan 2025	-		18.000	0.000	33.559	-
Phase 0 / Integration Contract	SS/CPIF	Lockheed Martin : Marietta, GA	-	3.095	Mar 2023	-		-		-		-	0.000	3.095	-
Other Transaction Authority (OTA)	SS/FP	SOSSEC, Inc : Salem, NH	-	-		4.985	Jan 2024	-		-		-	0.000	4.985	-
<b>Subtotal</b>			-	3.095		20.544		18.000		-		18.000	0.000	41.639	N/A

<b>Support (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PSC-OGCs	Various	WPAFB/RobinsAFB : TBD	-	-		2.542	Apr 2024	5.600	Apr 2025	-		5.600	0.000	8.142	-
<b>Subtotal</b>			-	-		2.542		5.600		-		5.600	0.000	8.142	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Test	PO	AFLCMC/WLS : Robins AFB, GA	-	-		2.200	Jan 2024	5.000	Jan 2025	-		5.000	0.000	7.200	-
SIL	MIPR	AFMC 578 SWES/ MXDPAA : Robins AFB, GA	-	-		1.216	Jan 2024	4.200	Jan 2025	-		4.200	0.000	5.416	-
<b>Subtotal</b>			-	-		3.416		9.200		-		9.200	0.000	12.616	N/A

			Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	3.095	26.502	32.800	-	32.800	0.000	62.397	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Replace Multi-Functional Control &amp; Display</b>	
Phase 0 / Integration Contract	
PDR	
Milestone B	
EMD	
SIL Testing	
CDR	
Developmental Test	
Milestone C	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Replace Multi-Functional Control &amp; Display</i></b>				
Phase 0 / Integration Contract	1	2023	4	2026
PDR	2	2023	2	2023
Milestone B	3	2023	3	2023
EMD	3	2023	4	2026
SIL Testing	1	2024	3	2025
CDR	4	2024	4	2024
Developmental Test	4	2025	1	2026
Milestone C	4	2026	4	2026

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**Exhibit R-2A, RDT&E Project Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671308 / C-5 Modernization Efforts
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
671308: C-5 Modernization Efforts	-	0.000	3.000	0.203	0.000	0.203	19.014	19.737	50.032	68.031	0.000	160.017
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**  
This program, BA 7, PE 0401119F, project 671308, C-5 Modernization Efforts, is a new start.

**A. Mission Description and Budget Item Justification**

The C-5 Modernization Efforts will develop future solutions for needed upgrades to combat obsolescence, safety of flight, and reliability/availability/maintainability issues to include but not limited to Mobile User Objective System (MUOS) Antenna upgrades, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), and viability improvement initiatives. The modernization upgrades include a new family of aircraft system concepts to provide U.S. forces with an improved radio resistant to jamming through fast-frequency hopping and digital modulation techniques. Efforts will also include initial capabilities studies and analysis, risk reduction efforts, and studies and analysis to address Diminishing Manufacturing Sources (DMS).

C-5 Modernization Efforts may include but not limited to studies and analyses, risk reduction efforts, and software development, Mobile User Objective System (MUOS) Antenna upgrades, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), and viability improvement initiatives. Upon completion, the Next Generation Airlift (NGAL) initial capability studies will determine requirements and technologies available to support the next generation airlift family of systems to integrate and accomplish rapid cargo delivery, survivability, and connectivity to assure Joint partner delivery in contested environments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY 2023 \$0.000 million and in FY 2024 \$0.000 million was expended for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2023	FY 2024	FY 2025
<b>Title:</b> Next Generation Airlift (NGAL)	0.000	3.000	0.000
<b>Description:</b> Initial Study of Capabilities			
<b>FY 2024 Plans:</b> Funding supports initial capability studies for the Next Generation Airlift (NGAL).			
<b>FY 2025 Plans:</b> N/A			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force	<b>Date:</b> March 2024
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671308 / C-5 Modernization Efforts
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Funding decreased due to ramp down of initial capabilities studies.			
<b>Title:</b> C-5 Modernization Efforts	-	0.000	0.203
<b>Description:</b> C-5 modernization efforts to include but not limited to Mobile User Objective System (MUOS) Antenna upgrades, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), and viability improvement initiatives. The upgrade to SATURN will provide U.S. forces with an improved radio resistant to jamming through fast-frequency hopping and digital modulation techniques.			
<b>FY 2024 Plans:</b> N/A			
<b>FY 2025 Plans:</b> Initial planning for C-5 communications upgrades to include but not limited to Second Generation Anti-Jam Tactical Ultra-High Frequency Radio (SATURN).			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding increased to support initial studies and planning for C-5 modernization efforts.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	3.000	0.203

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The acquisition strategies for NGAL and individual C-5 modernization efforts will be informed and determined by the recommendations and results from the initial capabilities studies.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671308 / C-5 Modernization Efforts
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	FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Next Generation Airlift</b>	
Studies & Analysis	
C-5 Modernization	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671308 / C-5 Modernization Efforts

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Next Generation Airlift</b>				
Studies & Analysis	3	2024	2	2025
C-5 Modernization	3	2025	4	2029